

## BACKGROUND OF THE INVENTION.

### 1. Field of the Invention.

10           The present invention relates to coolers in general and to a plate cooler for cooling hydraulic oil, in particular.

          The cooler is preferably made of top and bottom plates which, between them, hold a substantially parallelepiped packet of spaced plates forming fluid  
15   channels with cooling fins being interposed between adjacent fluid channels, the ends of the fluid channels being connected to fluid distribution channels which in turn lead to fluid input and output conduits.

### 2. The Prior Art.

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          The fluid channels in conventional plate coolers of this general type are as a rule constructed of flat tubes which are closed at their ends by cuboid inserts. Such structures suffer from the drawback of the manufacture of the flat tubes and, indeed, of the entire cooler being complex and expensive.

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## OBJECT OF THE INVENTION.

          It is an object of the invention to avoid this drawback and to provide a plate cooler of the kind referred to *supra* which is not only of a simple structure,  
30   but which may also be easily connected.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

#### BRIEF SUMMARY OF THE INVENTION.

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In the accomplishment of these and other objects the invention provides for a plate cooler in which each of the fluid channels is formed by the two spaced plates as well as by side and end plates arranged therebetween. Cooling fins are arranged between two lateral plates arranged in the area of the distribution  
10 conduits and provided with a fluid flow-through opening, the lateral plates being of substantially the same height as the fins. The plates, the side plates, the end plates, the lateral plates, the bottom plate and the cover plate are assembled into a packet by vacuum welding. Preferably, at least the plates are made of aluminum or an aluminum alloy.

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#### DESCRIPTION OF THE SEVERAL DRAWINGS.

The novel features which are considered to be characteristic of the invention are set forth with particularity in the appended claims. The invention  
20 itself, however, in respect of its structure, construction and lay-out as well as manufacturing techniques, together with other objects and advantages thereof, will be best understood from the following description of preferred embodiments when read in connection with the appended drawings, in which:

Fig. 1 is a schematic side view of the plate cooler in accordance with the  
25 invention;

Fig. 2 is a schematic front view of part of the plate cooler;

Fig. 3 is a sectional view of the plate cooler along line III-III of Fig. 1;

Fig. 4 is a sectional view of the plate cooler along line IV-IV of Fig. 2; and

Fig. 5 is a sectional view of the plate cooler along line V-V of Fig. 2.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT.

As shown in Figs. 1 to 4, the plate cooler for use with liquids, and more particularly with hydraulic oil, is preferably made of aluminum or an aluminum alloy and is provided with a parallelepiped packet 3 of spaced plates 4 disposed between a bottom plate 1 and a cover plate 2. Fluid channels 7 are formed by pairs of spaced plates 4 and separate side plates 5 and end plates 6 arranged between the plates 4. At their ends, the fluid channels 7 are connected to fluid distribution conduits 8 which lead to input and output channels structures as corner connectors 9, for instance. Cooling fins 10 are interposed between neighboring fluid channels 7. More particularly, the cooling fins 10 are positioned between two lateral plates 12 of substantially the same height as the cooling fins 10 and which are positioned in the area of the distribution conduits 8 and provided with a fluid flow-through opening 11.

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The bottom plate 1, the cover plate 2, the plates 4, the side plates 5, the end plates 6 and the lateral plates 12 are made of coated aluminum or of an aluminum alloy. They are assembled together as a packet 3 by vacuum welding which renders the cooler highly resistant to hydraulic stresses, permanent loads and vibrations.

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Those skilled in the art will understand that within the frame of the general concept of the invention the described embodiment may be altered in several different ways.

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